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| 09/666,481 | 09/20/2000 | Masayuki Morita | 0250-0821 | 7125 |

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EXAMINER

STOCKTON, LAURA

| ART UNIT | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.



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| APPLICATION NUMBER | FILING DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO. |
| | | | EXAMINER |

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DATE MAILED:

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This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☒ Responsive to communication(s) filed on December 30, 2002
☒ This action is FINAL

- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), ~~on thirty days~~, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-27 are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
☐ Claim(s) _____ is/are allowed.
☒ Claim(s) 1-27 are rejected.
☐ Claim(s) _____ is/are objected to.
☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
☐ The specification is objected to by the Examiner.
☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.
☐ received in Application No. (Series Code/Serial Number) _____
☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☐ Notice of Reference Cited, PTO-892
☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
☐ Interview Summary, PTO-413
☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

09/666,481

DETAILED ACTION

Claims 1-27 are pending in the application.

Claim Objections

Claim 27 is objected to for being a substantial duplicate of claim 22. When two claims in an application are duplicates, or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to reject the other as being a substantial duplicate of the allowed claim. M.P.E.P. 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C.

112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20, 22 and 27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

No support in the specification or the originally filed claims can be found for the phrase "Formula III produced contains less than 1.0% of 5-chloro-2-alkyl-4-isothiazoline-3-one" found in claim 20. Claims 22 and 27 depend from claim 20.

Response to Arguments

Applicants' arguments filed December 30, 2002 have been fully considered but they are not persuasive. Applicants argue the rejection of the claims under 35 U.S.C. § 112, first paragraph. Specifically, Applicants argue that Working Examples 2 and 3 on page 14 of the instant specification provide support for the language "Formula III produced contains less than 1.0% of 5-chloro-2-alkyl-4-isothiazoline-3-

one". In response, Working Examples 2 and 3 do not provide support for the language "Formula III produced contains less than 1.0% of 5-chloro-2-alkyl-4-isothiazoline-3-one". Instant claim 20 utilizes the compounds of Formula (I) as the starting material. In Working Examples 2 and 3, the compounds of formula (II) are utilized as the starting material (page 11, lines 9, 10 and 23-30 and page 12, lines 1-3). Therefore, Working Examples 2 and 3 are not embraced by claim 20 and cannot provide support for the language "Formula III produced contains less than 1.0% of 5-chloro-2-alkyl-4-isothiazoline-3-one".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. {GB 2,308,364} and Lewis et al. {U.S. Pat. 3,849,430}, each taken alone or in combination with each other.

Determination of the scope and content of the prior art (MPEP §2141.01)

Applicants claim a process of making a 2-alkyl-4-isothiazoline-3-one wherein an N-alkyl-3-mercaptopropionamide (or N,N'-di-alkyl-3,3'-dithiopropionamide) is reacted with chlorine in a solvent {e.g. dichloromethane (same as methylene chloride) and dichloroethane – see instant specification on page 5, lines 10-17 and page 9, lines 16-27}.

Kim et al. (pages 7, 8, 14, 17 and 18) teach a process of making a biocidal 2-methyl-4-isothiazoline-3-one wherein a N-methyl-3-mercaptopropionamide is reacted with chlorine in 1,2-dichloroethane (Scheme 5 on pages 12-13). Kim et al. also teach using N,N'-di-methyl-3,3'-dithiopropionamide as a starting material instead of N-methyl-3-mercaptopropionamide (page 8).

Lewis et al. (columns 1 and 2; and Example 8 in column 7) teach a process of making a biocidal 2-alkyl-4-isothiazoline-3-one wherein a

N,N'-di-alkyl-3,3'-mercaptopropionamide is reacted with chlorine in an organic solvent (e.g., ethylene dichloride). Lewis et al. teach using N,N'-di-methyl-3,3'-dithiopropionamide as a starting material instead of N-methyl-3-mercaptopropionamide (column 2, line 30). Lewis et al. also teach the various molar ratios which are embraced by the instant claims (column 2, lines 47-63).

Ascertainment of the difference between the prior art and the claims (MPEP §2141.02)

The difference between some of the processes of the prior art and the process instantly claimed is that of generic description of the reactants and/or products.

Finding of prima facie obviousness--rational and motivation (MPEP §2142-2413)

The indiscriminate selection of "some" among "many" is *prima facie* obvious, *In re Lemin*, 141 USPQ 814 (1964). The motivation to make the claimed compounds derives from the expectation that structurally similar compounds would possess similar activity (e.g., a biocide).

One skilled in the art would thus be motivated to utilize the processes of the prior art to arrive at the instant claimed process with the expectation of obtaining additional beneficial compounds that would be useful as biocides. Therefore, the instant claimed process would have been suggested to one skilled in the art.

The showing in the specification on pages 12 and 13 has been considered. However, the prior art used in the “comparative example” was not identified and the closest prior art was not compared {e.g., comparative example on page 13 uses ethyl acetate as the solvent}. Also see the above cited prior art and the solvents used therein. Therefore, the showing is not persuasive for overcoming the rejection of the instant claims under 35 U.S.C. § 103.

Response to Arguments

Applicants' arguments filed December 30, 2002 have been fully considered but have not been found persuasive. Applicants argue the rejection of the claims under 35 U.S.C. § 103. Specifically, Applicants allege that the selection of a solvent of a type as claimed when used with chlorine as the chlorinating agent provides a very high selectivity.

Applicants argue that there is no suggestion or motivation in Kim et al. to guide one of ordinary skill in the art to select the particularly claimed chlorinating agent (i.e., chlorine) and a solvent in which hydrogen chloride is insoluble or has low solubility (e.g., dichloroethane or dichloromethane).

In response, Kim et al. teach chlorine gas as one of only two possible chlorinating agents (page 13, lines 1-2). Kim et al. teach solvents such as dichloroethane and dichloromethane (page 13, second paragraph; and Example 1 on page 17). Additionally, Applicants are arguing limitations that are not found in each of the independent claims. For example, independent claim 20 claims only "a chlorinating agent in a

solvent” and not “a solvent in which hydrogen chloride is insoluble or has low solubility”. Therefore, Kim et al. do teach and suggest Applicants’ claimed chlorinating agent and solvent.

Applicants compare the results of Comparative Example 1 in Kim et al. (Tables 1 and 2 on pages 28-30 and 33) with the Comparative example and Working Example 1 found in the instant specification (page 13). Applicants argue that the teachings in Lewis et al. do not render obvious the claimed method of forming the 3-isothiazolones of Formula III by employing either Formulae I or II in conjunction with a chlorine halogenating agent and a solvent which has little or no solubility for hydrogen chloride in a ratio of halogenating agent to either of Formulae I or II of 2:1 or 3:1, respectively. Applicants argue that Example 1 of Lewis et al. points out that when a 3:1 ratio of halogenating agent and Formula III are used, that the 3-isothiazolone and the 5-chloro-3-isothiazolone are formed. Applicants argue that Example 8 in Lewis et al. utilizes a different starting material and produces a different product. Applicants also argue that Example 8 in Lewis et al. utilizes toluene.

In response, it is well established that consideration of a reference is not limited to the preferred embodiments or working examples, but extends to the entire disclosure for what it fairly teaches, when viewed in light of the admitted knowledge in the art, to person of ordinary skill in the art. *In re Boe*, 148 USPQ 507, 510 (CCPA 1966). Lewis et al. teach that chlorine is a preferred halogenating agent (column 2, lines 44-45). Lewis et al. teach that the reaction is carried out in a solvent such as ethylene dichloride (column 3, lines 7-9). Lewis et al. (column 2, lines 47-60) teach the molar ratios that are found in some of the instant claims (e.g., independent claim 20).

As stated above, Applicants are arguing limitations that are not found in each of the independent claims. For example, independent claim 20 claims only “a chlorinating agent in a solvent” and not “a solvent in which hydrogen chloride is insoluble or has low solubility”. Applicants argue the differences between Example 8 of Lewis et al. and the process of the instant claims. It is agreed that the instant R variable represents a C1 to C8 alkyl whereas Example 8 in Lewis et al. is a C10

alkyl (e.g., the 2-position of the isothiazoline-3-one ring). However, the substituent (e.g., the alkyl) at the 2-position of the isothiazoline-3-one does not take part in the reaction. The only difference between the process in Example 8 and, for example, the process in instant claim 24 is the length of the alkyl chain, which does not take part in the reaction. Therefore, Applicants' arguments are not persuasive.

Applicants further argue that neither Kim et al. nor Lewis et al. teach all the claimed features and do not suggest modifying the teachings therein. All of Applicants' arguments have been considered but have not been found persuasive. Applicants claim a process of making a 2-alkyl-4-isothiazoline-3-one wherein an N-alkyl-3-mercaptopropionamide (or N,N'-di-alkyl-3,3'-dithiopropionamide) is reacted with chlorine in a solvent. Kim et al. and Lewis et al. teach similar processes to the instant claimed process and each other as discussed above. The rejection is deemed proper and therefore, is maintained. For all the reasons given above, the instant claimed invention would have been suggested to one skilled in the art.

Conclusion

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

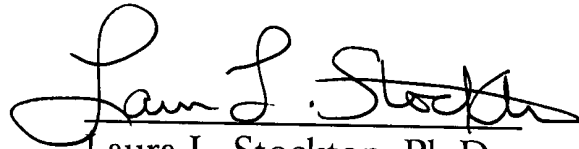
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to

Laura L. Stockton whose telephone number is (703) 308-1875. The examiner can normally be reached on Monday-Friday from 6:00 am to 2:30 pm. If the examiner is out of the Office, the examiner's supervisor, Joseph McKane, can be reached on (703) 308-4537.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1235.

The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4556.

A handwritten signature in black ink, appearing to read "Laura L. Stockton", written over a horizontal line.

Laura L. Stockton, Ph.D.

Patent Examiner

Art Unit 1626, Group 1620

Technology Center 1600

March 24, 2003